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List of Acronyms

CNL	Competitive Needs Limits
DCs	Developing Countries
ER	Exchange Rate
EU	European Union
FTAs	Free Trade Agreements
GATT	General Agreement on Tariff and Trade
GDP	Gross Domestic Product
GSP	Generalized scheme of preferences
HS	Harmonized System
LDCs	Least Developed Countries
MFN	Most Favored Nation
NRPTA	Non-Reciprocal Preferential Trade Agreement
OLS	Ordinary Least Squares
PPML	Poisson Pseudo-Maximum Likelihood
PTAs	Preferential Trade Agreements
RCA	Revealed Comparative Advantage
WTO	World Trade Organization
R&D	Research and Development

Abstract

The current study investigates the impact of the European Union's Generalized System of Preferences (GSP) and its enhanced version, GSP+, on Pakistan's bilateral exports to 27 EU member countries from 2003–2020. Utilizing a mixed methods approach, including descriptive trade analysis and augmented gravity model, the research evaluates both structural trends and policy effects. The analysis reveals that Pakistan's exports to the EU grew significantly, particularly after the introduction of GSP+ in 2014. Traditional sectors such as textiles, footwear, and hides and skins remained dominant, supported by high revealed comparative advantage (RCA). At the same time, emerging growth in sectors like stone and glass indicates early signs of export diversification. Regionally, the analysis underscored a high share of Pakistan's exports in EU markets, especially in Western and Southern Europe. For regression analysis, the Poisson Pseudo-Maximum Likelihood (PPML) estimator has been employed to produce consistent and robust estimates. The empirical findings revealed that GSP+ (post 2014) has a statistically significant and positive impact on Pakistan's exports to the EU. The study concludes by emphasizing the importance of trade diversification, market intelligence, and regulatory reform for sustaining export growth and strengthening Pakistan's integration into global value chains.

Keywords: European Union, Trade Preferences, GSP-GSP+, Competitiveness, Exports

1. Introduction

1.1 Background

In 1965, recognizing the special economic needs and to boost the exports of developing countries, General Agreement on Tariffs and Trade (GATT) parties made an amendment in enabling clause of GATT, which demanded that each party grant Most Favored Nation (MFN) tariff treatment to every other party, and waived the condition of reciprocity (Gil-Pareja *et al.,* 2014). In Tokyo Round of GATT (1979) developed countries agreed to give preferential and more differential treatment to least developed countries (LDCs) and developing countries (DCs) by adopting the enabling clause, the so-called "Decision on Differential and More Favorable Treatment, Reciprocity and Fuller Participation of Developing Countries" (World Trade Organization, 2013)**.** Under these amendments, many developed countries started offering "special and differential treatment" in the form of non-reciprocal trade preferences (NRTPs) to developing countries. One such preference is the GSP scheme of the EU. The aims of EU's non-reciprocal preferential trade agreement (NRPTA) in the form of GSP with LDCs and DCs include boosting their export earnings, granting preferential market access, encouraging industrialization, and ameliorating their slow rates of economic growth (Borchert & Ubaldo, 2020)**.**

The EU's GSP comprises three types of unilateral NRTP schemes: EBA (Everything but Arms) for LDCs, GSP for lower-income countries, and GSP+, which is an arrangement. If we arrange them on the scale of preferences given in each NRTP scheme, GSP plus falls in the middle, with EBA above. EU's GSP plus gives developing countries a special incentive to pursue sustainable development and help them gain export-led growth by giving preferential trade access to a country's traditional products.

There are certain elements and objectives linked with the GSP plus scheme. Firstly, it doesn't come with an automatic upgradation of preferential status. A country must apply for it and fulfill the criteria to obtain this status. Secondly, there are 27 different conventions, which a country must fulfill to be eligible for GSP plus and these conventions are broadly on: Human Rights, Labor Rights, Environment, and Governance. In return, the EU gives tariff free access to its market for over two-thirds of its exports.

Pakistan's 23% exports out of its total exports were sent to EU in 2014, making it Pakistan's biggest export destination. This study focuses on the EU's GSP scheme to analyze the impact

of its upgrade on the overall export performance of Pakistan in the EU market. Since December 2013 Pakistan is benefiting from GSP plus status after its successful application for the special preferences (GSP+) on the grounds of its "economic vulnerability". According to the European commission, a country is said to be vulnerable when: "it has a high degree of export concentration and a highly non-diversified export base". Pakistan, before being granted GSP+ status, was availing GSP status with limitations of quota on both country and sector-wise exports. GSP status is mostly awarded to low- and middle-income countries, with exports from the beneficiary restricted to the non-traditional sectors.

1.2. Uncertainty in EU's GSP

In the GSP, uncertainty prevailed due to the graduation criteria applied to countries and sectors. A country graduates from the scheme when the World Bank classifies it as an upper-middle- or high-income country for three consecutive years. Similarly, a sector graduates when a country's share of exports in that sector exceeds the threshold level of 1% (Borchert & Ubaldo, 2020).

These graduation rules basically declare a country to be competitive enough to trade without any NRTPs. Before the 2014 reforms, there was an element of uncertainty in the shape of country and sector graduation, and there was no complete free trade. Countries were reducing tariffs on only a few major product categories. To tackle this element of uncertainty, developing countries were refraining from being declared competitive enough to lose their preferential status in the next phase, due to the possibility of being declared competitive in the upcoming three-year report by the EU commission. (Borchert & Ubaldo, 2020).

1.3 EU's 2014 Reforms and Pakistan's Upgradation

Element of uncertainty in form of country and product graduation was playing the role of barrier for exports landing in European Union from GSP beneficiary countries. However, the EU's 2014 reforms of the GSP removed competitiveness graduation criteria in the sub-scheme (GSP+) of the EU's GSP, based on political and strategic relationships and the economic vulnerability of beneficiary countries. (Borchert & Ubaldo, 2021). After 2014 reforms GSP members total count dropped to almost half and import-share "threshold" increased to 2% (previously it was 1%) with Pakistan standing at 1.6% import-share in the EU market (*Pakistan Business Council*, 2015). Structural

reforms in EU's GSP and upgradation of Pakistan from GSP to GSP+ took place in the same year (2014). Both events overlap in case of Pakistan and for this reason we can use them interchangeably and together . Pakistan's exports to the EU markets increased by 65% after being granted reformed GSP+, which allow duty-free access to Pakistan in EU market form over 6300 tariff-lines. In 2014, Pakistan's overall exports were worth of EUR 5.4 billion, namely textile products, surgical equipment, lather, and sports goods (European Union, 2022).

This upgradation in NRTPs given to Pakistan eliminated the 'risk of graduating or in a way becoming more competitive'. In other words, now Pakistan can strive to improve its competitiveness while holding the GSP+ status in the EU. Now, whether Pakistan fully exploits the GSP+ to increase its export shares in EU markets is a question to ask.

Within the above perspective, this study aims to answer the following questions,

Questions this study will address are:

1 Did upgrading from GSP to GSP+ boost Pakistan's competitive strength in the EU market?

2 What benefits did Pakistan gain in terms of export product diversification and market share after receiving enhanced preferential treatment from the EU through GSP+ and the 2014 reforms?

3 How did upgrading to GSP+ influence Pakistan's export performance within the GSP framework?

1.4 Significance of Study

As commonly known, preferences are a kind of favor granted by developed countries to developing and least-developed countries. Depending upon the kind of preferences, changing circumstances and local conditions (both economic and structural) there could be varying degrees of impacts of preferences on the beneficiaries of these schemes.

There is a lack of studies being conducted for the beneficiaries of GSP. This study is an attempt to examine the impact of Pakistan's successful application for a more preferential status (GSP+) in the EU. Specifically, it assesses how GSP+ has influenced Pakistan's export competitiveness, as well as its effect on exports of products subject to zero and non-zero tariff rates under the Harmonized System

classification. This study tries to fill this gap in literature. Specifically, to assess the impact of uncertainty removal owing to the 2014 reforms in EU's GSP scheme, which took place in the same year when Pakistan's GSP status was updated to GSP+.

1.5 Objectives of the Study

Overall objective of the study is to examine the impact of "the preferential market access granted to Pakistan by EU through the GSP+ scheme, alongside the EU's 2014 reforms to its GSP framework" on export competitiveness, export product diversification and the market share and overall export performance of Pakistan in EU markets.

More specifically, the study intends to:

1 Analyze Pakistan's export competitiveness in EU markets by computing competitiveness indices for key product categories.

2 Evaluate the impact of upgrading from GSP to GSP+ (pre- and post-2014) on Pakistan's overall exports to the EU, focusing on export diversification and performance aspects.

2. Literature Review

2.1 Empirical Literature

Developing countries do benefit from the NRPTAs, such as GSP, GSP+, PTA, FTA, in the form of increased exports and this fact is supported by literature. For example, Gil-Pareja, Llorca-Vivero, Martinez-Serrano (2014) conducted a study to examine the NRPTAs and GSP's impact on exports of developing countries to developed countries using gravity equation analysis over the period of almost 5 decades (1960-2008) with the sample of 177 countries. This study found an economically significant effect of preferential arrangements on beneficiaries' exports, i.e., 32.2% on average increase in the exports of developing countries that are being granted such a preferential status during those 5 decades.

If there is a positive and a significant impact of NRPTAs on export flows of beneficiaries, then there must be a significantly negative impact of preferences removal on exports of the subject country. This statement is backed by the case study of Belarus which faced preference withdrawal in 2007 from EU's GSP scheme. The empirical study of Gnutzmann and Gnutzmann-Mkrtchyan (2022) established how the Belarusian economy got effected and faced a 27% decline in its exports

destined to EU markets due to GSP withdrawal on the grounds of Labor rights violations which is one of the four major categories of 27 conventions of EU.

After establishing the significant impact of preferences and knowing the nature of NRPTAs, it could be established that beneficiaries of preferences are at complete discretion of developed countries' trade policies, which is an element of uncertainty for developing country's exports. Hakobyan (2020) studied the impact of US GSP program expiration in 2011 on exports from developing countries. Results of the study show an average 3% drop in exports from developing countries and more hefty impact on textile and agricultural products, i.e., 9% and 5% fall respectively.

Studies of Devault (1996) and Hakobyan (2017) analyzed the impact of CNL based exclusions on export competitiveness of developing countries and results of the study indicate that imports of effected country fall in the first year and the negative effect is reflected in the several coming years. One of the key findings of the study in focus is that, after the withdrawal of a country from GSP, the non-GSP members benefit more from a country's exclusion than the still-beneficiaries. Uncertainties linked with the preferential treatments towards developing countries raise the need for trade policies focusing only on short-term preferences. Evidence generated from the study of 184 countries over the period of 5 decades using gravity model set-up indicates that, on average trade preferences decrease 4% exports of developing countries (Herz & Wagner, 2011). The study mainly used "Pseudo Poisson Maximum Likelihood" (PPML) estimation method, incorporating country-pair and time dummies with year-fixed effects. According to the findings of Herz & Wagner (2011), trade preferences, if lasting for less than a decade, have a positive effect on the exports of developing countries but in the long run they have a negative trade effect.

Study of Borchert and Ubaldo (2020) examined the effect of uncertainty removal in the context of EU GSP reform of 2014. Paper used PPML estimator to estimate all the models and used triple difference-in-difference method to capture all three sources of variation i.e., Country and product eligibility for GSP plus and timing of reform to capture pre and post reform effects on imports of EU. The study found that 2014 reforms in GSP increased EU imports by 45% on average under GSP+ scheme.

Through literature so far, it has been observed that irrespective of the extent of tariff reduction in a preference scheme, its type, duration of agreement, and beneficiary country, in preferential trade there will always be a factor of uncertainty and risk of withdrawal. For developing countries, getting competitive is the only standalone long run benefit of preferences

for its beneficiaries.

Achieving competitiveness in the markets where a country's major exports are destined is as important as having preferential status from that destination. To measure export competitiveness multiple indexes are used. For example, to measure the export competitiveness of Chinese agricultural products, Long (2021) used two indices for the purpose, one is "Trade Competitiveness" (TC) index and the other is "Revealed Comparative Advantage (RCA) index developed by Balassa (Balassa, 1977).

2.2 Concluding Remarks

Literature on preferential schemes and enhanced market access, and more specifically on GSP scheme of European Union, shows how these schemes have a positive impact on the export growth of LDC and Developing Countries. Literature also illustrates what adverse effects these schemes can have if withdrawal from them takes place. Furthermore, literature highlights the importance of gaining export competitiveness for the developing countries and hence reducing the dependence on the preferential schemes in the form of NRTPs from developed countries, which, in the long- run, works as distortion for the real economic growth of the countries. On the other hand, past case studies encourage the need to study the removal of uncertainties linked with the EU-GSP arrangement in link with the 2014 reforms and their impact on the Beneficiary countries.

Lack of studies on the competitiveness relationship with the preference arrangement and the impact of uncertainty removal from such schemes on export performance of developing countries urges the need to study this aspect as well, and that too through the lens of beneficiary, which is potentially a developing country like Pakistan.

3. Theoretical and Conceptual Framework

3.1 Theoretical Studies

The initial theorization of trade preferences through preferential agreements can be traced back to work of Jacob Viner (1950), which Bhagwati (1998) refers to as the "First Regionalism." Viner's work on the issues of 'Customs Unions' was to examine the shape of global trading system after the end of disastrous World War II (Bhagwati *et al.*, 1998)**.** Viner's analysis of customs unions in the first regionalism was a static approach focused on the welfare implications of customs unions. Whereas Treaty of Rome in 1957, which was a result of common market formations,

nudged many scholars to further develop the theory of regionalism which is later referred as second regionalism by Bhagwati (1993) and was based on "dynamic time path questions".

According to Bhagwati, Greenaway, and Panag (1998) Viner's and others' theoretical analysis of 'static' welfare implications of trade preferences and the notion that 'free trade or any form of trade preferences will lead to welfare improvement' inherits two issues: Trade Diversion and the Natural trading Partners issue. Bhagwati argues that pro-preferences implications are not justified as many empirical studies highlight the non-negligible aspects of trade diversion in PTAs, Pravin (1998) and Sheng-Jin and Jeffrey (1997) provided empirical evidence on an ultimate effect of PTAs in their studies. And the myth that PTAs do not lead to trade diversions because external trade barriers are low enough to not lead to any trade diversions under preferences was demolished by the argument of "administrative protection", a term borrowed from Michael Finger, in the form of Anti-dumping actions.

In our case, Pakistan's preferential status in the EU market in the form of GSP+ is subject to fulfilment of 27 EU conventions , and preferences are subject to expire, so ultimately, we must trade on the competitive basis for long- term gains, but at what cost? This study will analyze this aspect of the preferences particularly in context of EU's GSP.

3.2 Conceptual Framework

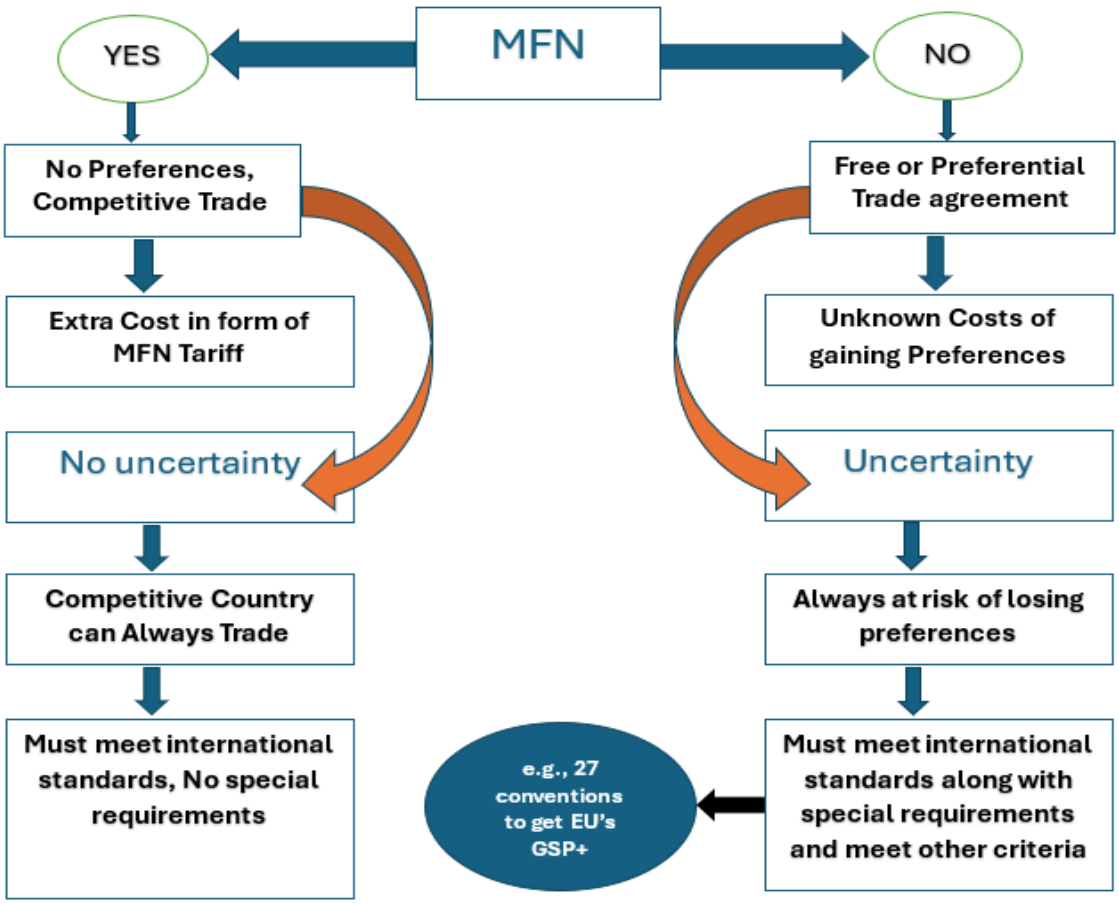
World Trade Organization's (WTO) Most Favored Nation (MFN)[1] treatment is what makes it truly multilateral. If there is no preferential, free, or regional trade agreement between any WTO member countries and there is competitive setting in the market without any other trade barriers, 'countries can trade and capture market share if they are competitive than others', WTO through its "article l of GATT"[2], requires them to equally treat each other without any discriminations i.e., MFN treatment to every other WTO member country.

Now, if a country or region is in a preferential trade arrangement with a country or region, then MFN will not be applicable, and that could be the case of complete or partially free trade between those two countries or regions. Any tariff reduction for a specific country, region, or a category of countries below MFN tariff is considered a preferential setting between preference awarding country and its beneficiaries. So far, if there are no preferential settings between

[1] "A most-favored-nation (MFN) clause requires a country providing a trade concession to one trading partner to extend the same treatment to all"
[2] https://www.wto.org/english/docs_e/legal_e/gatt47_01_e.htm

countries, the MFN tariff is the additional cost of trade.

Now there are two things to consider in NRTPs, one is costs linked with these preferences, and the other is benefits or gains a beneficiary of NRTPs make. First thing first, preference awarding countries may come up with some demands as in Pakistan's case, EU requires to fulfill 27 conventions to be eligible for GSP+. Now, what is more affordable or bearable for countries like Pakistan: trade preferences at hefty costs linked to fulfilment of demands, or trade by competing in international market at the cost of MFN tariff? The answer will remain a mystery until those costs are worked out. For the time being we will stick to the conceptual framing of factual and counter factual scenarios in an ideal scenario i.e., no other trade barriers in place and WTO's GATT article l in practice.

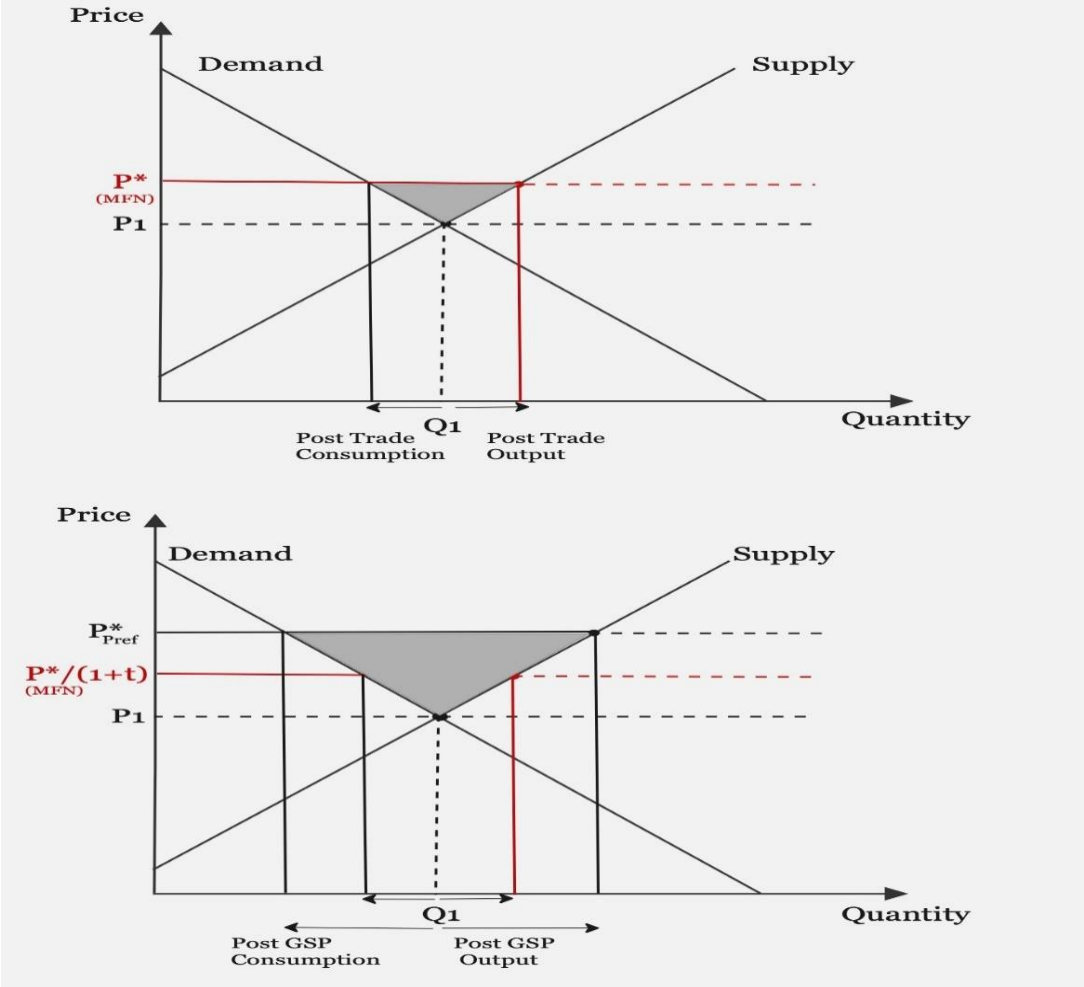


Source: Author's own illustration

Gaining competitiveness should always be prioritized over gaining trade preferences, as it yields more sustainable long-term benefits. This is particularly true when considering the associated

costs and the inherent uncertainty present in any preferential trade arrangement. A country is said to be large when it can influence international prices of goods it trades and, in our case, internal price in the preference-granting country because of its market share e.g., China will be considered a large country in EU market. On the other hand, a small country is the one that can't influence the internal price of preference-granting countries because of insignificant export share in those countries e.g., Pakistan in EU. In our case, we are analyzing the impact of EU's preferences to Pakistan in the form of GSP and GSP+ on its export performance.

Figure 3.1: Market effects of GSP preferences[3]



To see whether these schemes have any impact on economic welfare and development goals of beneficiaries, as claimed by awarding countries. In both the Graphs of Fig. 3.1, P_1 and Q_1 are the

[3] Krugman, P. R. (1991). Geography and Trade (p. 86). MIT Press.

price and quantity at equilibrium when there is no trade taking place and the country is a closed economy. If we see Fig. 3.1 (A) as a case of Pakistan and EU, with Pakistan being beneficiary and EU being preference-awarding body. P^*_{MFN} is the price Pakistan will get for its output sold to EU in a competitive setting (without GSP), where MFN is the "ad valorem tariff rate"[4]. Fig. 3.1 shows that before preferences (GSP) there is less demand in the domestic market and more production at price P^*_{MFN} , which is same what producers are getting in EU market. Producers will not sell it for less price in domestic market because they can earn P^*_{MFN} price in EU market. Now, if EU awards preferences to Pakistan, it will excuse local exporters from MFN tariff. And as established before, Pakistan is a small country and cannot influence prices of products it exports in EU market and hence prices will remain at P^* in EU market. The price gains from preferences are visible in Fig 3.1 (B) as Pakistani exporters can sell their products in EU market at higher prices as $P^*_{pref} > P^*/(1 + t_{MFN})$. Domestic consumption will contract as producers will not sell at prices lower than what they can get in the EU, i.e., price P^* and production in a beneficial country will increase because of higher sales prices. Both decreased demand and increased production in Pakistan will cause growth in exports to EU. This shows 'terms of trade' gains made by beneficiary of preferences. Some gains come at the cost of domestic consumer surplus because they will now face higher domestic prices and less demand. Overall, there is net welfare gain for preference beneficiary country, which is the shaded area between two prices in figure 3.1. (A&B). But net welfare gains with competitive setting (Fig. 3.1 A) are less than net welfare gains after getting preferential access (Fig. 3.1 B) to the EU markets.

Graph A: Competitive Trade Case	**Graph B: Preferential Trade Case**
Consumer Surplus loss = − (a + b)	Consumer Surplus loss = −(a + b + a1 + b1)
Producer Surplus Gain = + (a + b + c)	Producer Surplus Gain = +(a + b + c + a1 + b1 + c1
Net Welfare Gain = + c	Net Welfare Gain = + (c + c1)
ToT Gains = $(P^* - P^*_{MFN})$	ToT Gains = $(P^* - P^*_{Pref})$

To conclude, the flow chart showed how there is a hidden cost involved whenever there is a free or preferential trade case, and the graphs show how the beneficiary of preferences gain from these trade agreements. Overall, there are gains in preferential trade, but the risk of preferential

[4] Ad valorem means proportionate to value and ad valorem tariff is "the custom duty which is calculated as a percentage of the value of the product".

access termination can change the scenario.

4. Methodology and Data

4.1 Empirical Model

To empirically examine the relationship of trade preferences and exports and to determine the significance and impact of GSP+ on Pakistan's export flows to EU countries, the study employed the gravity model, a well-known empirical model of international trade with its roots found in the early 1970's. The chapter further discusses data sources, variable construction, and justification of model choice for a comprehensive empirical study.

4.1.1 Competitiveness Index

Study has calculated the competitiveness of Pakistan's major export product lines to EU countries by using one of three indicators of international trade flows as in Kang, Yang, and Zhang (2021).

This study employed Revealed Comparative Advantage (RCA) index, which is based on Ricardian concept of comparative advantage (see Chapter 5). The RCA index is often used to quantitatively measure the export performance of different sectors of a country. In this study, the formula for calculating the RCA index of different products exported to EU takes the following form:

$$RCA(X_{ij}) = (X_{product}^{EU}/X_{Total}^{EU}) / (X_{product}^{World}/X_{Total}^{World}) . (1)$$

where, *RCA(Xij)* denotes revealed comparative advantage of country *i* in country *j, i* is exporter (Pakistan) and *j* is importer (EU)

$X_{Product}^{EU} and X_{Product}^{World}$ denotes exports of a product to EU and world from Pakistan respectively. $X_{Total}^{EU} and X_{Total}^{World}$ denote total exports of Pakistan to EU and worldwide respectively

Following Balassa (1965), RCA index generates non-negative range of results and different criteria are set for its interpretation, such as RCA ≥ 2.5 shows strong comparative advantage; RCA ≤ 0.8 implies no comparative advantage; 01.25 ≤ RCA ≤ 2.5, implies relatively strong comparative advantage; 0.8 ≤ RCA ≤ 1.25, shows general comparative advantage.

4.1.2 Gravity Model

This study utilized Gil-Pareja, Llorca-Vivero, and Martinez-Serrano (2014) and Herz and Wagner (2011) type Gravity model to examine the impact of preferences (GSP+) by EU to Pakistan on trade flows between EU and Pakistan over the years (2003 to 2021) that makes it an

ex-post analysis. Using this model, help us to determine whether Pakistan's upgradation from GSP to GSP+ is trade- creating or its share is stagnant in the EU market.

Initially proposed by Tinbergen (Leibenstein & Tinbergen, 1966)**,** the gravity model of international trade is a foundational empirical framework that has been used to explain the determinants of bilateral trade flows between countries. The model framework is conceptually inspired by Newton's law of universal gravitation. The general form of the gravity model can be expressed as:

$$T_{ij} = G \cdot \frac{\left(GDP_i^{\alpha} \cdot GDP_j^{\beta}\right)}{D_{ij}^{\gamma}} \qquad (2)$$

Tij represents trade between country *i* and country *j*, GDP_i and GDP_j represent their respective economic sizes, *Dij* denotes the distance between them, and *α, β*, and *γ* are parameters to be estimated, while *G* is a constant of proportionality. In empirical analysis, this framework is often log-linearized to allow for easier estimation using linear regression techniques.

Anderson (1979) was among the first to provide a microeconomic foundation for the gravity equation by assuming constant elasticity of substitution (CES) preferences and product differentiation by place of origin, known as the "Armington assumption". Gil-Pareja, Llorca-Vivero, and Martinez-Serrano (Gil-Pareja *et al.*, 2014) used the augmented gravity model to study the effects of trade preferences given to developing counties by developed countries. Development of theoretical bases of the gravity model in different studies (Anderson, 1979; Anderson & Van Wincoop, 2003; Deardorff, 1998; Redding & Venables, 2004) is taking place ever since it originated in 1979 (Klasen *et al.*, 2016). In our case, Pakistan's preferential status in the EU market in the form of GSP plus is subject to fulfilment of 27 conventions of EU and preferences are subject to expire so ultimately. The general form of model is as follows.

$$X = f\,(gsp, ln\_gdp\_eu, ln\_gdp\_pak, distance, tariffs, ln\_pak\_er) \qquad (3)$$

A Gravity model equation looks like:

$$exports_{ijt} = \alpha_0 + \alpha_1\,\mathrm{gspp}_{ijt} + \alpha_2\, ln\_gdp\_eu_{it} + \alpha_3 ln\_gdp\_pak_{jt} + \alpha_3 distance_{ij} + \alpha_4 tariffs_{ijt} + \alpha_5 ln\_pak\_er_{jt} + \varepsilon_{ijt} \qquad (4)$$

The data set employed for the regression analysis includes 27 cross sectional units, which are the countries in this context. The data ranged over 2003-2020 with 53,816 observations. Over the years, with evolving transportation modes, reduced costs, and technological advancements, empirical evidence shows that distance is explaining less of bilateral trade as compared to economic size of the country (GDP) (Melitz, 2007). Another study Marimoutou, Peguin, and

Peguin-Feissolle (2010) found that the greater the size of the importing country, the less negative effect of distance between the trading partners will be. Antràs, *et al.* (2022) argued that import tariffs tend to be on the higher side for final goods and decrease gradually down the chain of production. Additionally, the positive effect of tariff escalation can be explained by the economic theory through the argument that when there is presence of economies of scale in both the down and upstream production line in exporting countries, irrespective of the tariff rates, production will increase, and the overall sector will get a boost in exports due to cost efficiency. Similar could be the case in this study, as Pakistan has economics of scale in textile, footwear, leather and somewhat consumer and intermediate goods, so a positive tariff or non-zero tariff can still lead to higher exports.

Table 4.1: Data Source and Variables

Variable	**Description**	**Source**
Pakistan's Exports to EU	EU imports since 2000 by tariff regime, by HS-2, value in euros	Eurostat, ESTAT
Real effective exchange rate of Pakistan	Official exchange rate, LCU per Euro, period average	World Bank calculations based on IMF Finance Statistics data.
GDP of Pakistan	GDP at current US$ rate	World Bank and OECD national accounts data
GDP of EU countries	GDP at current US$ rate	World Bank and OECD national accounts data
Distance	Simple distance between major cities, measured in Kilometers	CEPII GeoDist database
Tariff Rates	Weighted Average to Preferential tariff rates by EU on Pakistan	Eurostat, ESTAT
GSP and GSP+	Dummy variable, takes value 0 in GSP years and 1 in GSP+ years	Self-generated
Exports of Pakistan by product groups	Export (US$ Thousand) of Pak to EU and Worldwide	WITS Trade data (UN comtrade)

4.1.3 Estimation Technique

Traditional estimation techniques such as Ordinary Least Squares (OLS) and Fixed Effects (FE) have not been employed in our study as OLS is known for its inconsistent and biased estimates when handling datasets containing large number of zero trade flows. Similarly, the fixed effect estimator also requires log-linearizing the dependent variable, which again excludes

observations with zero trade. Hence, to address these issues, the Poisson-Pseudo-Maximum-Likelihood (PPML) method has been used for empirical analysis. The rationale for utilizing PPML regression model is that it first handles zero trade flows without requiring the log transformation of the dependent variable, which is problematic in traditional log-linear models (Higashida & Managi, 2014). Moreover, PPML is robust to heteroskedasticity, a common feature in trade data where the variance of trade flows increases with their size.

For the pre-estimation analysis, the study assessed the correlation and the presence of heteroskedasticity in the data has also been detected. The post estimation tests have also been applied to verify the robustness of empirical results. The variance inflating factor (VIF) test of multicollinearity and Wald test for joint significance of variables has been analyzed.

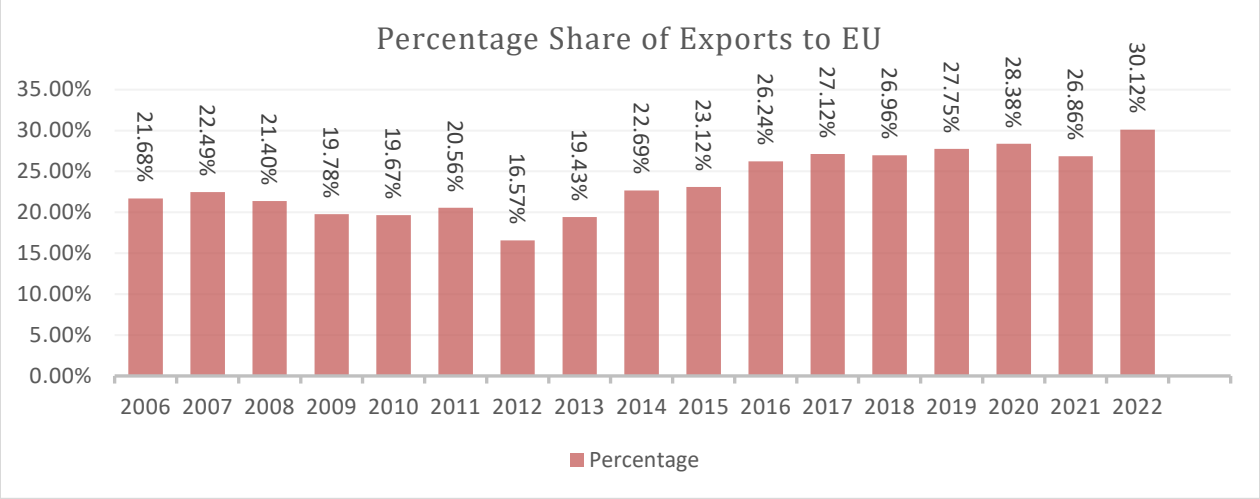
5. Pre- and Post-Upgradation Nexus with Exports

Pakistan-EU trade relations took a new peak when Pakistan was unilaterally granted the status of GSP+ by EU back in 2014. To analyze the impact of this upgradation on the export performance and diversification, this study performed a descriptive analysis of Pakistan's export both before and after the upgradation. Study also computed the competitiveness index and checked for any improvements in the Competitiveness of Pakistan's exports in EU market.

5.1 Descriptive Analysis of PAK-EU Trade

EU has been a significant trading partner of Pakistan from past 3 decades. This relationship has evolved overtime by the preferences being granted to Pakistan by EU. After 2014, a significant increase has been seen in exports of Pakistan after tariffs were reduced to zero in more than 66% of tariff lines. The figure 5.1 visually presents the percentage share of exports of Pakistan to EU from total exports to the world revealing a clear structural shift in trade alignment after 2014. In 2006, the EU accounted for 21.68% of Pakistan's total exports. In 2014, the EU share jumped to 22.69%, and this trend continued upward, reaching over 28% by 2020, and ultimately peaking at 30.12% in 2022. This marks a significant shift, reflecting not only the benefits of tariff concessions under GSP+ but also a deepening trade relationship.

Figure 5.1: Pakistan's Share of Exports to EU Countries



5.1.1 Product Category-wise Percentage Share in the EU Markets

The export share data from 2006 to 2013 reflects Pakistan's concentration in a few key product categories in its trade with the EU (Table 5.1). Footwear products experienced a dramatic rise in their share of EU exports, climbing from 26.99% in 2006 to 61.89% in 2013, indicating a growing dominance of this sector in the EU market. Similarly, Hides and Skins consistently held a significant share, fluctuating between 36% and 44%, making it one of the largest contributors to EU-bound exports during this period. Textiles and Clothing also maintained a steady and substantial share around 24 to 27%, underscoring its central role in Pakistan trade with EU. Food Products showed a steep decline, starting at 34.41% in 2006 but falling sharply to 10.41% by 2013. Overall, Pakistan's exports to the EU before GSP+ were highly concentrated in Footwear, Hides and Skins, and Textiles, with a gradual narrowing of the export base as other sectors like food and plastics lost ground in percentage share terms.

Table 5.1: Pakistan's Percentage Share in Total Exports to EU pre-GSP

Product	**Year**							
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Animal	15.75	6.06	5.10	5.84	5.03	7.89	8.22	5.83
Vegetable	4.64	4.89	5.13	4.09	4.29	3.68	3.46	5.54
Food Products	34.41	33.35	28.71	26.82	10.30	11.33	5.98	10.41
Minerals	2.80	1.57	1.45	1.55	2.57	3.45	3.36	4.82

Product	Year							
	2006	2007	2008	2009	2010	2011	2012	2013
Chemicals	11.13	10.81	11.19	8.22	9.80	7.40	4.96	6.12
Plastic and Rubber	26.83	24.29	40.88	29.79	20.15	12.39	8.47	12.26
Hides and Skin	36.01	39.34	43.14	44.79	43.64	44.44	40.59	42.83
Textile and Clothing	23.80	25.92	26.42	24.43	25.02	27.71	22.37	25.00
Footwear	26.99	36.26	35.79	40.80	53.78	54.81	53.87	61.89
Stone and Glass	8.53	3.10	1.75	0.71	0.48	0.65	0.19	0.61
Metals	11.14	12.26	10.49	10.49	14.64	16.51	12.88	12.85
Machines and Electronics	5.04	2.39	2.72	3.13	6.52	6.04	2.28	1.95
Transportation	11.60	13.31	13.04	4.70	16.01	11.86	11.39	12.57
Miscellaneous	34.79	37.37	37.20	34.36	34.31	31.22	21.94	29.82
Raw Material	11.90	7.65	7.67	8.55	8.08	8.55	10.12	10.71
Intermediate Goods	19.23	20.73	21.13	17.40	16.35	15.58	10.93	14.52
Consumer Goods	22.66	23.44	21.66	21.39	21.59	24.93	20.89	23.65
Capital Goods	16.91	21.09	20.91	20.05	21.79	19.40	18.28	16.74

Table 5.2 reveals an expansion and deepening of Pakistan's export share with the EU during 2014-2022. Footwear, which was already dominant before GSP+, saw its share peak at 67.38% in 2017 and remained consistently above 57% in 2022. This remarkable stability suggests that GSP+ preferences reinforced Pakistan's existing strength in the EU footwear market. Similarly, Hides and Skins maintained a very high share, fluctuating between 43% and 49%, confirming their continued importance in the EU export basket. The Textiles and Clothing category also experienced a notable increase in its share, growing from 28.92% in 2014 to 38.30% in 2022. This upward trend reflects the sector's ability to capitalize on duty-free access under GSP+. Stone and Glass, which had negligible shares before GSP+ (below 1% in most years), emerged as a new growth area, rising to 8.97% by 2022. Conversely, Plastic and Rubber saw a

more volatile trend, after falling sharply from its pre-GSP highs, it climbed back to 21.83% in 2022, showing signs of recovery. Similarly, Intermediate Goods rose from 15.46% to 24.87%, suggesting deeper integration into EU supply chains. In contrast, sectors like Metals and Transportation displayed more unpredictable patterns, with declining or fluctuating shares in the latter half of the period.

Table 5.2: Pakistan's Percentage Share of Total Exports to EU post-GSP+

Product	**Year**								
	2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Animal	4.88	3.03	2.35	2.45	2.48	1.97	2.73	3.99	4.77
Vegetable	6.81	5.65	5.69	6.15	8.44	9.72	11.84	11.48	10.07
Food Products	8.77	6.72	10.89	10.27	9.25	13.27	19.60	16.69	34.55
Minerals	5.46	5.83	5.73	7.55	7.27	6.30	7.50	5.62	6.37
Chemicals	5.29	5.70	4.46	5.82	5.55	6.76	8.74	8.83	7.00
Plastic and Rubber	22.22	16.18	16.61	15.30	11.77	19.61	10.83	15.01	21.83
Hides and Skin	44.74	43.53	46.33	46.57	46.17	46.65	49.23	45.46	44.12
TEXTILE and Clothing	28.92	29.62	33.73	35.31	36.11	36.78	36.66	34.21	38.30
Footwear	65.64	58.93	59.75	67.38	64.70	59.94	60.02	57.84	57.51
Stone and Glass	1.89	6.35	6.52	6.16	7.91	5.63	5.56	7.27	8.97
Metals	10.57	13.35	11.61	13.83	9.53	6.09	6.51	4.55	3.37
Machines and Electronics	3.95	3.41	2.90	3.09	3.82	4.92	5.42	3.79	3.24
Transportation	14.25	14.35	12.90	14.97	20.79	16.85	12.29	15.93	19.22
Miscellaneous	31.81	30.76	30.89	29.08	30.53	30.11	31.44	31.12	32.75
Raw Material	10.86	7.13	7.39	8.13	6.31	10.32	13.87	12.80	10.74
Intermediate Goods	15.46	15.05	18.03	19.04	18.56	18.75	19.09	17.36	24.87
Consumer Goods	28.52	29.68	32.74	33.37	34.02	34.22	34.13	32.85	35.06
Capital Goods	19.39	21.25	20.41	20.58	21.14	20.85	22.66	21.39	22.02

5.1.2 Competitive Index

Following Balassa (1965), RCA index generates non-negative range of results, and different criteria are set for its interpretation, such as RCA ≥ 2.5 shows strong comparative advantage; RCA ≤ 0.8 implies no comparative advantage; 01.25 ≤ RCA ≤ 2.5, implies relatively strong comparative advantage; 0.8 ≤ RCA ≤ 1.25, shows general comparative advantage. Hence using Balassa's (1965) criteria, we analyzed Pakistan's RCA across various product categories before (2006-2013) and after the implementation of the GSP+ scheme (2014–2022) (see Chapter 4).

The data show that Pakistan had a relatively strong comparative advantage in a few key products during both the pre-GSP period (2006–2013) and the post-GSP+ period (2014–2022) (see Tables 5.3 and 5.4). These include Textiles and Clothing, Hides and Skins, and Footwear, with RCA values consistently above 1.25 (based on average values). Textiles and Clothing during the pre-GSP period (1.24) shows general comparative advantage while during the post-GSP+ period it falls under strong comparative advantage (1.29). Specifically, the Footwear sector demonstrated the highest RCA, maintaining levels above 2.3 in both periods, bordering on a strong comparative advantage. The Food Products sector also saw a notable drop from general to no comparative advantage, while Consumer Goods remained within the general comparative advantage range and even improved slightly in the post-GSP+ period. Most other products, including Animal, Vegetables, Metals, and Machinery, Minerals, and Electrical, exhibited RCA values below 0.8 in both periods, indicating no comparative advantage.

Table 5.3: Revealed Comparative Advantage Before Upgradation

Product	**Year**								
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**Avg**
Animal	0.73	0.27	0.24	0.30	0.26	0.38	0.50	0.30	0.37
Vegetable	0.21	0.22	0.24	0.21	0.22	0.18	0.21	0.28	0.22
Food Products	1.59	1.48	1.34	1.36	0.52	0.55	0.36	0.54	0.97
Minerals	0.13	0.07	0.07	0.08	0.13	0.17	0.20	0.25	0.14
Chemicals	0.51	0.48	0.52	0.42	0.50	0.36	0.30	0.32	0.43

Product	Year								
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**Avg**
Plastic and Rubber	1.24	1.08	1.91	1.51	1.02	0.60	0.51	0.63	1.06
Hides and Skin	1.66	1.75	2.02	2.27	2.22	2.16	2.45	2.20	2.09
Textile and Clothing	1.10	1.15	1.23	1.24	1.27	1.35	1.35	1.29	1.25
Footwear	1.25	1.61	1.67	2.06	2.73	2.67	3.25	3.18	2.30
Stone and Glass	0.39	0.14	0.08	0.04	0.02	0.03	0.01	0.03	0.09
Machines and Electronics	0.23	0.11	0.13	0.16	0.33	0.29	0.14	0.10	0.19
Transportation	0.54	0.59	0.61	0.24	0.81	0.58	0.69	0.65	0.59
Raw Material	0.55	0.34	0.36	0.43	0.41	0.42	0.61	0.55	0.46
Intermediate Goods	0.89	0.92	0.99	0.88	0.83	0.76	0.66	0.75	0.84
Consumer Goods	1.05	1.04	1.01	1.08	1.10	1.21	1.26	1.22	1.12
Capital goods	0.78	0.94	0.98	1.01	1.11	0.94	1.10	0.86	0.97

Table 5.4: Revealed Comparative Advantage After Upgradation

Product	Year									
	2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Avg**
Animal	0.22	0.13	0.09	0.09	0.09	0.07	0.10	0.15	0.16	0.12
Vegetable	0.30	0.24	0.22	0.23	0.31	0.35	0.42	0.43	0.33	0.31
Food Products	0.39	0.29	0.42	0.38	0.34	0.48	0.69	0.62	1.15	0.53
Minerals	0.24	0.25	0.22	0.28	0.27	0.23	0.26	0.21	0.21	0.24
Chemicals	0.23	0.25	0.17	0.21	0.21	0.24	0.31	0.33	0.23	0.24
Plastic and Rubber	0.98	0.70	0.63	0.56	0.44	0.71	0.38	0.56	0.72	0.63
Hides and Skin	1.97	1.88	1.77	1.72	1.71	1.68	1.73	1.69	1.46	1.73
Textile and Clothing	1.27	1.28	1.29	1.30	1.34	1.33	1.29	1.27	1.27	1.29
Footwear	2.89	2.55	2.28	2.48	2.40	2.16	2.11	2.15	1.91	2.33
Stone and Glass	0.08	0.27	0.25	0.23	0.29	0.20	0.20	0.27	0.30	0.23
Machines and Electronics	0.17	0.15	0.11	0.11	0.14	0.18	0.19	0.14	0.11	0.14

Product	Year									
	2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Avg**
Transportation	0.63	0.62	0.49	0.55	0.77	0.61	0.43	0.59	0.64	0.59
Raw Material	0.48	0.31	0.28	0.30	0.23	0.37	0.49	0.48	0.36	0.37
Intermediate Goods	0.68	0.65	0.69	0.70	0.69	0.68	0.67	0.65	0.83	0.69
Consumer Goods	1.26	1.28	1.25	1.23	1.26	1.23	1.20	1.22	1.16	1.23
Capital goods	0.85	0.92	0.78	0.76	0.78	0.75	0.80	0.80	0.73	0.80

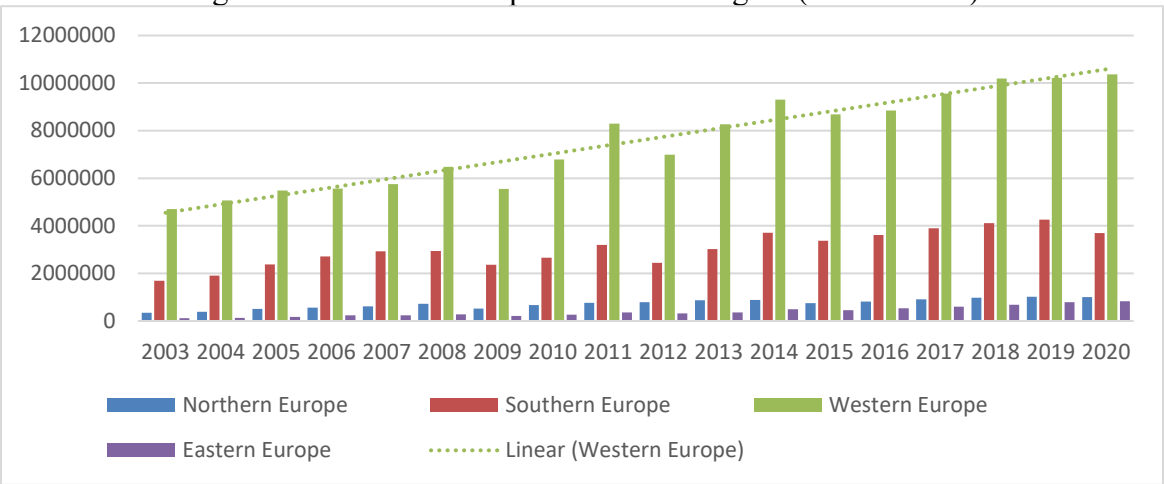
The RCA trend between the two periods (2006–2013 and 2014–2022) highlights notable shifts in Pakistan's export competitiveness. Among the high RCA sectors, Textiles and Clothing and Footwear maintained their comparative advantage with positive but modest changes. Footwear sustained its strong RCA with a marginal increase (0.02). Textiles also slightly improved (0.05), indicating continued strength, especially under the GSP+ regime. However, Hides and Skins, which initially (before 2014) show a relatively strong RCA, witnessed a decline of -0.35 during post-GSP+ period. This drop suggests that Pakistan may be losing ground in this segment, possibly due to global shifts in sourcing, EU regulations, or domestic challenges in leather processing. Among all the products, the most significant positive shift was observed in Stone and Glass products (0.14). On the other hand, a few low-RCA sectors such as Minerals and Vegetable Products showed improvements (0.09 and 0.10), though they remain below the general comparative advantage threshold. Lastly, Consumer Goods showed a meaningful increase (0.11), reinforcing the success of Pakistan's labor-intensive manufacturing sectors. Conversely, Capital and Intermediate Goods both declined, indicating potential weaknesses in the country's industrial upgrade and value-chain integration. Overall, Pakistan's export strengths under the GSP+ scheme appear to remain focused on traditional sectors, with limited evidence of diversification in industrial or high-tech product categories. The analysis of the RCA on average before and after upgradation indicates notable shifts in Pakistan's export competitiveness.

5.1.3. Market share and comparison of regions within Europe

Figure 5.4 provides a comprehensive view of Pakistan's export trends to different EU regions from 2003 to 2020. The data are segmented into four regional groups: Northern Europe, Southern Europe, Western Europe, and Eastern Europe. Among all regions, Western Europe stands

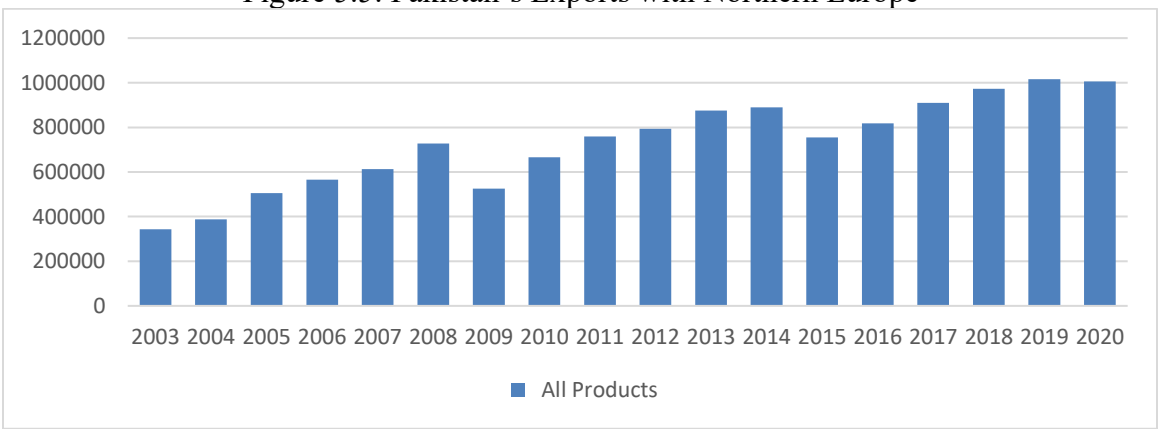
out as the most dominant export destination showing a consistent strong upward trend, further emphasized by the dotted linear trend line.

Figure 5.4: Pakistan's Exports with EU Region (All Products)



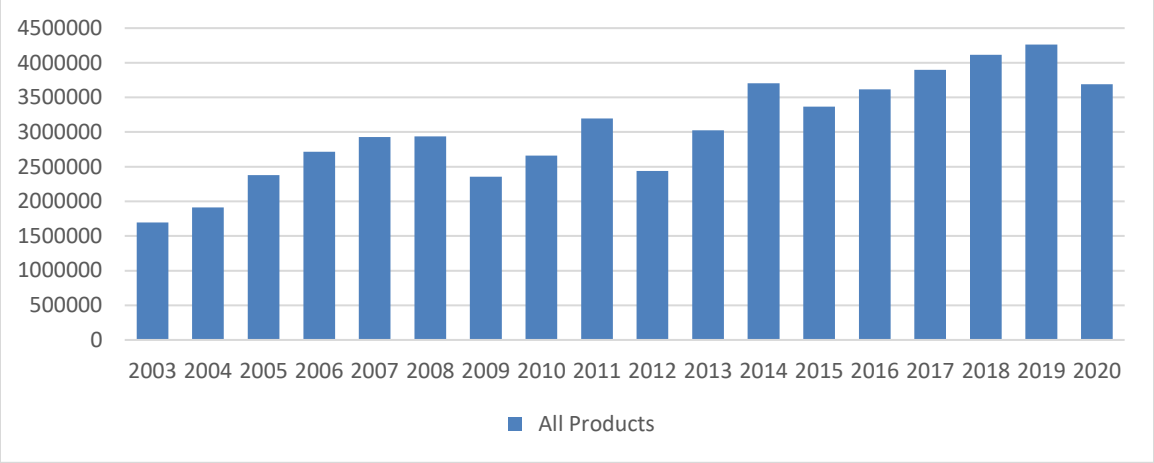
Northern Europe demonstrated steady but modest export growth, from $0.35 million in 2003 to about $1 million in 2020 (Figure 5.4). The fluctuating trend around 2009 and 2015 might be attributed to economic slowdowns or shifts in consumer demand. Northern countries have smaller populations, which could explain the relatively lower figures compared to other regions.

Figure 5.5: Pakistan's Exports with Northern Europe



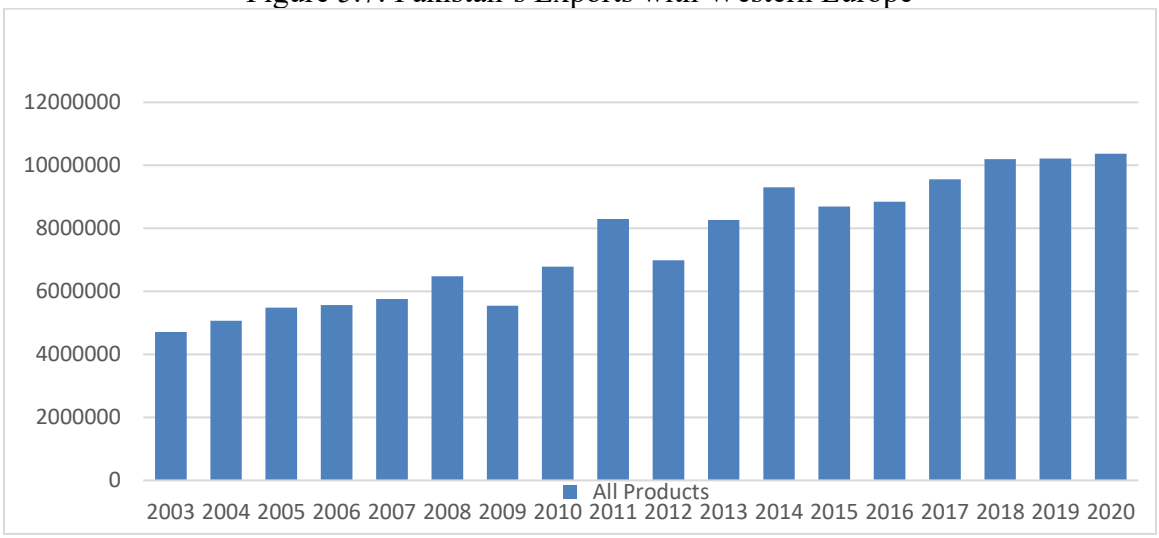
Similarly, Pakistan's Exports to Southern Europe also saw notable growth, rising from around $1.7 million in 2003 to over $4 million in 2019, with a minor decline in 2020 possibly due to COVID-19 disruptions. Growth here reflects market diversification and improved logistics and trade facilitation.

Figure 5.6: Pakistan's Exports with Southern Europe



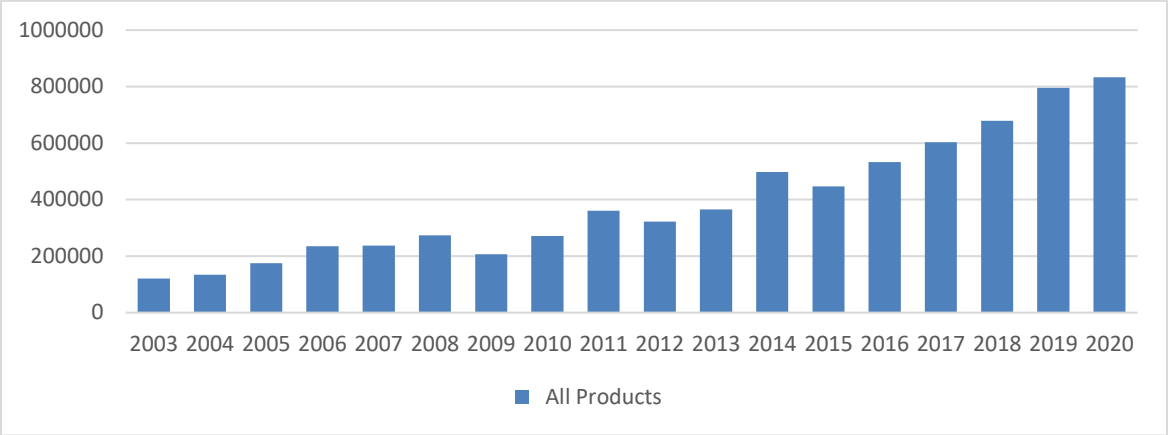
Western Europe steadily remained Pakistan's largest export market within the EU, with exports growing from approximately $4.8 million in 2003 to over $10 million by 2020 (Figure 5.7). The sharp increase after 2010 can be linked to stronger trade ties, recovery from the 2008 global financial crisis, and the EU's GSP+ incentives, which boosted competitiveness for Pakistani goods.

Figure 5.7: Pakistan's Exports with Western Europe



Lastly, Eastern Europe showed the smallest export volume, from roughly $0.1 million in 2003 to over $0.85 million by 2020 (Figure 5.8). This reflects Pakistan's growing interest in emerging EU markets and possibly the result of targeted trade missions and bilateral agreements.

Figure 5.8: Pakistan's Exports with Eastern Europe



5.2 Concluding Remarks

The analysis points to a significantly evolving trade relationship. At a macro level, the EU has grown to become one of Pakistan's most crucial export destinations, with the regions' share in total exports rising markedly after 2014, coinciding with Pakistan's inclusion in the EU's GSP+. This preferential arrangement has not only enhanced market access by removing tariffs on key exports but also incentivized a stronger focus on European markets. From 21% of Pakistan's total exports in the early 2000s, the EU's share peaked at over 30% by 2022, confirming its status as a major trade partner in Pakistan's export landscape. The study also underscores RCA analysis across two periods (2006–2013 vs. 2014–2022) revealing that although sectors like Footwear and Textiles and Clothing maintained their competitiveness, others such as Food Products, Plastic and Rubber, Miscellaneous Goods, and even Hides and Skins saw significant declines in RCA. In contrast, some sectors showed encouraging improvement, Stone and Glass starting from a low base recorded the highest positive RCA change, and its share in exports rose steadily post-GSP+, indicating emerging diversification. The region wise analysis revealed that Western Europe continued to dominate as the largest and most reliable destination for Pakistani exports. Southern Europe demonstrated sustained demand in traditional sectors, while Northern Europe and Eastern Europe showed moderate but stable growth, especially in consumer goods. This suggests that Pakistan is making significant inroads into non-traditional EU markets, which is a positive sign for future export diversification. High-tech products and industrial components continue to be largely absent from the EU-bound portfolio. This reflects deeper structural challenges within Pakistan's export system, including low Research and Development (R&D) investment, limited industrial upgrading, and insufficient integration into high-value global supply chains.

6. Results and Discussions

Starting with descriptive analysis, where each key variable is analysed by its mean, standard deviation, minimum, and maximum values (see Table 6.1).

Table 6.1: Descriptive Stats

Variable	Mean	Std. dev.	Min.	Max.
export	1734360	16300000	0	5.91E+08
gsp	0.450572	0.497556	0	1
gdp_eu	6.17E+11	9.37E+11	5.49E+09	4.26E+12
gdp_pak	2.33E+11	8.85E+10	9.18E+10	3.77E+11
distance	5337.929	798.6104	3425	7175
tariffs	1.005773	2.963223	0	52.4
pak_er	123.3268	40.60375	65.50693	215.8527

The dataset comprised of 53,816 observations capturing the impact of Pakistan's exports to 27 EU countries from 2003 to 2022. The mean export value is approximately $1.7 million, with a significant standard deviation, showing large variation and the presence of zero in export values, which justifies the use of a PPML technique. Tariffs show a high standard deviation with a maximum of 52.4%, indicating that certain products or countries faced substantial trade barriers. The logged exchange rate for Pakistan shows gradual depreciation over time.

Table 6.2: Correlation Coefficient

Variable	export	gsp	gdp_eu	gdp_pak	distance	tariffs	pak_er
export	1.000						
gsp	0.0386	1.000					
gdp_eu	0.1619	0.0355	1.000				
gdp_pak	0.0421	0.8766	0.0542	1.000			
distance	0.0707	0	0.3587	0	1.000		
tariffs	0.0416	-0.2707	-0.0256	-0.2492	-0.0507	1.000	
pak_er	0.0107	0	0.0200	0.0074	0.0002	-0.0222	1.000

The correlation matrix reveals few variables are notably correlated (Table 6.2). As expected, export has weak positive correlations with most independent variables, the strongest being with *gdp_eu*, suggesting that exports slightly increase with the GDP of EU partner countries. The treatment dummy *gsp* is moderately correlated with *gdp_pak* and *pak_er*, both reflecting Pakistan's macroeconomic trends during the post-GSP+ period. *gdp_pak* and *pak_er* are highly positively correlated. Tariffs show a weak negative relationship with treatment dummy did, *gdp_pak*, and *pak_er*, indicating a possible decline in tariff rates over time. Distance, being time-invariant, correlates moderately with *gdp_eu* and weakly with export, as expected in gravity models. Overall, the low to moderate correlation values suggest that the model variables are sufficiently distinct to yield stable coefficient estimates in the PPML framework.

Table 6.3: Heteroscedasticity

Breusch-Pagan for Heteroscedasticity	
Chi-sq	72152.54
p-value	0.0000

To examine the presence of heteroscedasticity, the study applied the Breusch-Pagan-Godfrey test of heteroscedasticity after the pooled OLS regression analysis (Table 6.3). The null hypothesis indicates the absence of heteroscedasticity. The p-value of the chi-square distribution is less than the significance level of 0.01, which means the null hypothesis is rejected, indicating the presence of heteroscedasticity in the model.

Table 6.4: Results of PPML Gravity Model

Variable	**Coefficient**	**SE**
gsp	0.396**	(0.164)
ln_gdp_eu	0.977***	(0.032)
ln_gdp_pak	0.769***	(0.215)
distance	0.0003***	(0.000)
tariffs	0.114***	(0.012)
ln_pak_er	0.155	(0.124)
constant	-35.34***	(5.64)
R^2	0.011	

Note: parentheses show robust standard errors in, *** shows significance at 1% level of significance

The PPML estimator using a semi-log form has been used to examine the determinants of Pakistan's exports to EU countries for the period 2003-2020 (Table 6.4). The PPML regression results provide valuable insights into the determinants of Pakistan's exports to the European Union (EU), particularly in examining the effectiveness of the generalized system of preferences plus. In the regression model, our dummy variable, GSP, is positive and statistically significant. The GSP+ trade preference status has a positive and statistically significant effect on exports. Specifically, the presence of GSP+ is associated with a 0.396 unit increase in exports, holding all other factors constant. The coefficients of economic size of both the exporting country (Pakistan) and the importing countries (EU countries) are positively associated with export levels and are statistically significant. A 1% increase in the EU GDP leads to a 0.977 unit increase in exports from Pakistan, confirming the gravity model's central prediction that larger economies trade more. Similarly, a 1% increase in Pakistan's GDP results in a 0.769 unit increase in exports, highlighting the importance of domestic production capacity and export supply-side strength. The distance variable reveals an unexpected result indicating a small but statistically significant positive coefficient. Contrary to traditional gravity model expectations, a 1 km increase in distance is associated with a 0.0003 unit increase in exports. Similarly, the tariff variable also presents a counterintuitive finding: a 1-unit increase in tariffs is associated with a 0.114 unit increase in exports. The exchange rate suggests that a 1% depreciation in the Pakistani rupee results in a 0.155 unit increase in exports; however, this effect is statistically insignificant. Lastly, the coefficient of the constant term is negative and significant, which could reflect fixed trade frictions not captured by the included variables, including language barriers, cultural differences, or unobservable institutional factors. Lastly, the R^2 value is low, which is typical in gravity models using pooled or cross-sectional data, as they often miss bilateral fixed effects and sector-specific influences. Overall, these results support the notion that GSP+ plays a critical role in Pakistan's exports to the EU, while also highlighting the importance of economic size, careful treatment of distance, and the subtle effects of tariffs and exchange rates.

6.1 Post-estimation Test

The following post estimation tests are performed to verify the validity and robustness of the empirical findings.

To detect the problem of multicollinearity, the study applied the variance inflation factor (VIF) test (see Table 6.5). The value of VIF is less than 5, which indicates that there is no problem with multicollinearity in the model.

Table 6.5: Variance Inflation Factor (Multicollinearity)

	VIF	**1/VIF**
ln_gdp_pak	3.32	0.301
gsp	3.35	0.299
ln_gdp_eu	1.35	0.739
distance	1.34	0.746
tariffs	1.08	0.922
ln_pak_er	1.00	0.999
Mean VIF	1.91	

Table 6.6: Wald Test for Joint Significance of the Coefficients

Wald Test	
Chi-sq	1624.42
p-value	0.0000

The significance of coefficients has been assessed using the Wald test (see Table 6.6). The null hypothesis states that every coefficient is equal to zero at the same time. The p-value is less than 0.05 which shows that the null hypothesis is rejected hence the factors do significantly affect the dependent variable and that at least one of the coefficients is not equal to zero.

6.2 Concluding Remarks

This chapter has empirically analyzed a gravity model framework using the PPML estimator to examine the impact of the EU's pre-GSP and post-GSP+ schemes on Pakistan's exports to 27 EU member states from 2003 to 2020. Post-estimation test reveals joint significance of variables and no problem of multicollinearity. Overall, the findings affirm that the GSP and GSP+ schemes and economic size significantly contributed to enhancing Pakistan's export performance, alongside other gravity-determined factors, offering important implications for trade policy and international trade negotiations.

7. Conclusion and Policy Implications

This study has comprehensively examined Pakistan's bilateral export performance. It drew upon both trade pattern analysis and a robust empirical investigation using an augmented gravity model, estimated through the Poisson Pseudo-Maximum Likelihood (PPML) method. These analytical approaches revealed important trends, sectoral strengths, and policy-relevant insights into Pakistan's evolving trade relationship with the EU under the GSP and its enhanced variant, GSP+.

From a descriptive stance, Pakistan's exports to the EU countries have grown steadily, with a significant increase post-2014. The export growth was predominantly evident in traditional sectors such as textiles and clothing, footwear, and hides and skins, products that have also shown high RCA. The analysis of RCA pre- and post-GSP+ period confirmed the continued strength of these sectors. It also highlighted a significant decline in other products, including plastic and rubber, food products, and miscellaneous goods. Notably, emerging growth in categories like stone and glass shows early signs of diversification. Moreover, the regional breakdown of EU exports' share revealed a progressive diversification in destination markets. While Western Europe remained dominant, Southern Europe suggested responsiveness to new opportunities within the region. Eastern Europe, although a smaller market in absolute terms, demonstrated the highest relative growth, indicating successful penetration into non-traditional EU markets. This shift aligns with the objectives of the GSP+ scheme and speaks to Pakistan's adaptability in seeking out new commercial positions.

To examine the impact of GSP+ scheme on Pakistan's exports, the study employed the PPML gravity regression model. Core independent variables include distance, pre- and post-GSP+, GDP of Pakistan, GDP of Europe, tariffs, and exchange rate of Pakistan. The results revealed that GSP and GSP+ schemes significantly contributed to enhancing Pakistan's export performance, economic size of both trading partners boosted trade. The distance variable was positive and significant, redefining the role of geographic and transport-related frictions in shaping trade costs. Mixed effects of exchange rates and positive relation of tariffs with exports revealed sector-specific dynamics and underscore the complexity of external trade factors.

Analysis confirmed that trade preferences can have measurable effects on a country's trade performance, justifying continued investment in preferential agreements and institutional capacity.

The preferential access granted by GSP+ has been effectively utilized in traditional sectors, and there is early evidence of emerging diversification in Pakistan. However, the analysis also revealed a structural weakness in Pakistan's production sectors, with limited progress in intermediate inputs, capital goods, and technology-intensive sectors. Hence for strengthening core export sectors,

- Pakistan must expand efforts to develop new industries with competitive potential. Specifically, shifting its focus on those underutilized sectors, which showed significant growth in the post-GSP+ period such as Stone and Glass.
- Moreover, the government/ exporters should further optimize trade preferences by improving product standards, aligning with EU environmental and labor standards, and enhancing regulatory compliance.
- Finally, diversifying destination markets within the EU regions, particularly in Eastern Europe, should be achieved through trade diplomacy, advertisement of regional brands, and bilateral chambers of commerce.

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APPENDICE

List of EU-28 Countries

1.	Austria	16.	Latvia
2.	Belgium	17.	Lithuania
3.	Bulgaria	18.	Luxembourg
4.	Croatia	19.	Malta
5.	Cyprus	20.	Netherlands
6.	Czech Republic	21.	Poland
7.	Denmark	22.	Portugal
8.	Estonia	23.	Romania
9.	Finland	24.	Slovakia
10.	France	25.	Slovenia
11.	Germany	26.	Spain
12.	Greece	27.	Sweden
13.	Hungary	28.	United Kingdom
14.	Ireland		
15.	Italy		

Region	Countries	Region	Countries
1. Northern Europe	Denmark	2. SOUTHERN EUROPE	Italy
	Finland		Spain
	Sweden		Portugal
	Estonia		Greece
	Latvia		Croatia
	Lithuania		Slovenia
	Ireland		Malta
			Cyprus
3. Western Europe	France	4. EASTERN EUROPE	Czech Republic
	Luxembourg		Poland
	Belgium		Slovakia
	Netherlands		Hungary
	Germany		Romania
	Austria		Bulgaria
	United Kingdom		